



## Awareness and Utilization of Guidelines in the Management of Hypertension among Medical Practitioners in a Tertiary Hospital in Nigeria

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### Authors' contributions

This work was carried out in collaboration between all authors. All authors participated in the design of the study, performed the statistical analysis and wrote the protocol. Author NNU wrote the first draft of the manuscript written. Authors CAA and CEN managed the analyses of the study. All authors read and approved the final manuscript.

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### ABSTRACT

**Background:** Hypertension is a public health problem in Sub-Saharan Africa, as it is responsible for increased cardiovascular morbidity and mortality. The need to improve the global control of high blood pressure and mitigate its complications has necessitated the stipulation of various treatment guidelines. In recent times, it includes those of European Society of Hypertension (ESH), the Seventh report of the Joint National Committee on the Prevention, Detection, Evaluation and Treatment of Hypertension (JNC VII), and the National Institute for Health and Care Excellence (NICE) guidelines. The aim of this study is to determine the level of awareness and utilization of management guidelines in the treatment of hypertension among medical practitioners in a tertiary hospital.

**Methodology:** A cross sectional descriptive study design was chosen and a structured questionnaire was developed and administered. A total of seventy medical practitioners had analyzable data.

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**Results:** Most of the respondents (87.0%) were aware of the existence of treatment guidelines in the management of hypertension, but only 68.1% routinely use any of the available guidelines in their practice. The most frequently used guideline was the JNC VII treatment guideline (64.7%) followed by NICE guideline (25%), and ESH guideline (17.6%). Among the medical practitioners, the utilization of guidelines was mostly for the management of hypertensive-diabetics (63.8%), followed by their use in the management of hypertensive-chronic kidney disease patients (34.8%), and then in essential hypertensive patients (39.1%). Most of the practitioners however, combined the use of therapeutics and life style modification (75.4%).

It was observed that with increase in level of education, awareness also increased, with the senior registrars been most aware (94.1%), and the least aware been the interns (78.1%). The interns however, routinely utilized the guidelines more than the registrars (65.6% versus 64.3%) although this was not statistically significant ( $p=0.231$ ). Although most of the participants considered the guidelines appropriate for the management of hypertension in our environment (73.1%) they however feel the training they have received in the course of their training was not adequate (81.2%).

**Conclusion:** Medical practitioners in this hospital fairly complied with stated guidelines especially when there is co-morbidity, but feel they may require more formal training in the use of these guidelines in order to better manage their hypertensive patients. The findings should serve as a starting point to design new teaching paradigms to increase physician awareness of hypertension treatment guidelines in Nigeria in particular, and in Africa and the developing world, in general.

*Keywords: Awareness; utilization; guidelines; hypertension; management; medical practitioners; Nigeria.*

## 1. INTRODUCTION

Hypertension is an important public health challenge in both economically developing and developed countries [1]. Significantly, hypertension as highly modifiable antecedent for cardiovascular disease (CVD) is responsible for more deaths worldwide than any other, including tobacco use, obesity, and lipid disorders [2]. Uncontrolled hypertension is associated with end-organ damage resulting in heart disease, stroke, and renal disease and eventually death [3]. The JNC VII guidelines [4]. Define hypertension as the average of two or more systolic blood pressures more than or equal to 140mmHg taken on at least two subsequent visits, and/or the average of two or more diastolic blood pressures more than or equal to 90 mmHg taken on at least two subsequent visits.

Hypertension was identified in a recent World Health Organization report as among the most common causes of premature death, and by 2000 had affected 972 million persons worldwide with about 2/3<sup>rd</sup> found in developing countries [5]. It is predicted to increase by 60% to 1.56 billion people by 2025 [5].

It has been suggested that the prevalence of cardiovascular disease and hypertension is increasing rapidly in sub-Saharan Africa (SSA)

[6]. The current prevalence in many developing countries, particularly in urban societies, is said to be already as high as those seen in developed countries [7]. Increasing urbanisation, changing diets, sedentary lifestyle and obesity have all contributed to increasing prevalence of systemic hypertension in this region [8]. The national survey done in Nigeria comprised urban and rural populations, and gave crude national prevalence rates of 11.1% for men and 11.2% for women respectively (based on blood pressure threshold of 160/90 mmHg) [9]. However with the current definition of hypertension based on the JNC VII, it can be inferred that many more Nigerians are hypertensive.

Hypertension remains one of the most important preventable contributors to disease and death. Abundant evidence from clinical trials has shown benefit of antihypertensive drug treatment in reducing important health outcomes in persons with hypertension [10-11]. Over the past three decades there has been an unprecedented production of scientific information in the form of longitudinal and cross-sectional studies and trials. This abundant and rapid access to information has a tendency to overwhelm the busy clinician. In order to help clinicians digest the rapidly developing and abundant information, guidelines have been developed by a variety of professional bodies. Clinical guidelines therefore

present a cost-effective way to synthesize and filter study conclusions so as to improve and standardise the effectiveness and efficacy of treatment [12]. These guidelines are thus presented as a set of recommendations to the medical intern, primary care physician and for all medical professionals who are in the forefront in the war against hypertension.

The need to improve the global control of high blood pressure and mitigate its complications has necessitated the stipulation of various treatment guidelines. In recent times, these guidelines include those of European Society of Hypertension (ESH), the Seventh report of the Joint National Committee on the Prevention, Detection, Evaluation and Treatment of Hypertension (JNC VII), and the National Institute for Health and Care Excellence (NICE) guidelines.

It is now widely appreciated that the identification and lifelong treatment of hypertension are critical to successful risk reduction in cardiovascular disease. This study was to assess the awareness and utilization of these guidelines in the management of hypertension among medical practitioners in the University of Port Harcourt Teaching Hospital. Approval of the Ethics committee of the University of Port Harcourt Teaching Hospital was obtained.

## 2. MATERIALS AND METHODS

### 2.1 Study Design and Population

This was a descriptive cross sectional descriptive study conducted in the University of Port Harcourt Teaching Hospital involving 69 medical doctors. This is one of the third generation tertiary hospitals established by law in 1985.

### 2.2 Study Tool

This included structured self administered questionnaire which assessed socio-

demographic and other information including age, gender, educational level, knowledge, and clinical practice of the medical practitioners of the University of Port Harcourt Teaching Hospital.

### 2.3 Inclusion Criteria

Respondents were medical practitioners that are staff members of the University of Port Harcourt Teaching Hospital.

### 2.4 Data Analysis

Statistical analysis was done using Statistical Package for Social Sciences (SPSS Inc, Chicago, IL) version 17. Results were expressed as means± standard deviation. Comparison for statistical significance was by student's t test for continuous variables and chi-square analysis for categorical variables. Pearson's correlation test was used to test for relationships between variables were necessary. A p-value of <0.05 was considered statistically significant

### 2.5 Limitations

The study only covered medical interns, medical officers and residents. The specialist consultants were not recruited in this study.

## 3. RESULTS

Table 2 shows that most of the respondents (76.8%) are medical practitioners with 10 years or less duration of practice.

As depicted in Table 3, over 85% of the study respondents had awareness of the existence of guidelines in the management of hypertension, but only 68.1% routinely use any of the available guidelines in their practice. The most frequently used guideline was the JNC VII treatment guideline (64.7%) followed by NICE guideline (25%), and ESH guideline (17.6%).

**Table 1. Demographic data of respondents**

Variable		Frequency	Percentage
<b>Age</b>	21-30	31	44.9
	31-40	31	44.9
	41-50	7	10.1
<b>Occupational status</b>	Medical officers	6	8.7
	Medical interns	32	46.4
	Registrars	14	20.3
	Senior registrars	17	24.6

**Table 2. Occupational history of the respondents**

<b>Variable</b>		<b>Frequency</b>	<b>Percentage</b>
<b>Duration of practice</b>	≤ 10 years	53	76.8
	>10 years	16	23.2
<b>Patients/week</b>	≤ 10	15	21.7
	11-20	24	34.8
	21-30	18	26.1
	31-40	7	10.1
	41-50	5	7.2
<b>Hypertensive patients/month</b>	1-5	13	18.8
	6-10	18	26.1
	11-15	9	13.0
	16-20	8	11.6
	21-25	3	4.3
	>25	18	26.1

**Table 3. Knowledge of hypertension management guidelines by respondents**

<b>Variable</b>		<b>Frequency</b>	<b>Percentage</b>
Aware of guidelines	Yes	60	87
	No	9	13.0
<b>Level of education and awareness</b>			
Medical officers	Yes	6	100
	No	0	0
Medical interns	Yes	25	78.1
	No	7	21.9
Registrars	Yes	13	92.9
	No	1	7.1
Senior registrars	Yes	16	94.1
	No	1	5.9
<b>Level of awareness</b>			
JNC VII	Yes	44	64.7
	No	24	35.3
ESC/ESH	Yes	12	17.6
	No	56	82.4
NICE	Yes	17	25.0
	No	51	75.0

Table 4 shows that the utilization of guidelines was mostly for the management of comorbidities for example the management of hypertensive-diabetics (63.8%), followed by their use in the management of hypertensive-chronic kidney disease patients (34.8%), and then in essential hypertensive patients (39.1%). Most of the practitioners however, combined the use of therapeutics and life style modification (75.4%).

Also shown in Table 4 is the fact that increases in level of education, correlated with increasing awareness of hypertension management

guideline amongst study respondents as the senior registrars were most aware and the young interns were least aware. The interns however, routinely utilized the guidelines more than the registrars (65.6% versus 64.3%) although this was not statistically significant ( $p=0.231$ ).

As observed in Table 5, although the adequacy of existing guidelines and its appropriateness for the management of hypertension in our environment were found to be high in this study, most respondents feel the training they have received in the course of their training was not adequate (81.2%).

**Table 4. Practice of respondents in the utilization of guidelines**

Variables		Frequency	Percentage
Routine utilization of guidelines	Yes	47	68.1
	No	22	31.9
<b>Routine utilization of guidelines by status</b>			
Medical officers	Yes	4	66.7
	No	2	33.3
Medical interns	Yes	21	65.6
	No	11	34.4
Registrars	Yes	9	64.3
	No	5	35.7
Senior registrars	Yes	13	76.5
	No	4	23.5
<b>Indications for utilization</b>			
Hypertension only		27	39.1
Hypertension/DM		44	63.8
Hypertension/CKD		24	34.8
<b>Aspects of guidelines utilized</b>			
Lifestyle modification only		3	4.3
Therapeutics only		4	5.8
Both		52	75.4
Don't know		10	6.7

**Table 5. Appraisal of guidelines by respondents**

Variables		Frequency	Percentage
Adequacy of existing guidelines	Yes	52	75.4
	No	17	24.6
Appropriate for our environment	Yes	49	73.1
	No	18	26.9
Adequacy of training	Yes	13	18.8
	No	56	81.2

#### 4. DISCUSSION

Hypertension is at epidemic proportions worldwide; nevertheless, only a minority of subjects with this condition receive effective treatment and have their blood pressure (BP) controlled to goal. In the United States, more than 50 million people have blood pressure at or above the optimal level of 120/80 mmHg, yet only approximately half receive treatment and just 31% of those taking anti-hypertensive medication have their BP controlled to below 140/90 mmHg [13]. The problem may be worse elsewhere, as evidenced by a survey indicating that only 9% of patients with hypertension in the United Kingdom had lowered BP to less than 140/90mmHg [14].

Over the past decade, clinical guidelines have increasingly become a part of clinical practice. As defined by the Institute of Medicine, clinical guidelines are “systematically developed statements to assist practitioners and patient decisions about appropriate healthcare for specific clinical circumstances” [15]. Inadequate control of hypertension is likely attributable to a combination of factors. Problems with screening and behavioural counselling, unclear treatment goals; and complex or costly pharmacotherapy (or both difficulties) led to patient and physician no adherence to management guidelines in the past [16].

Most the respondents (87.0%) in this study were aware of the existence of treatment guidelines in the management of hypertension. This high level of awareness is not unexpected as the study was carried out in a tertiary health institution where there is ready access to information. However, only 68.1% of the respondents routinely use these guidelines in their practice. Resistance to a more extensive utilization of these guidelines may be due to a number of factors amongst which are the availability of conflicting guidelines from different professional bodies which can confuse and frustrate practitioners; and because many clinicians often find them inconvenient and time consuming to use [17].

The apparent inertia and resistance to these guidelines may also be due to the fear by clinicians that these guidelines can hurt clinical judgement. Algorithms, though well intentioned, that reduce patient care into a sequence of binary (yes/no) decisions often do injustice to the complexity of medicine [18].

This study also revealed that awareness of the guidelines was as should be expected related to the level of education; with the senior registrars been most aware (94.1%), while the medical interns were the least aware (78.1%). Moving forward, the importance of further medical training will be reflected on more qualitative health care delivery to the community.

Curiously however, even though the registrars were more aware of the guidelines than the medical interns (92.9% versus 78.1%), the interns routinely used the guidelines than the registrars (65.6% versus 64.3%) although this was not statistically significant ( $p=0.231$ ). This may be due to the fact that interns are under close supervision by their seniors, and are still impressionable, and are therefore more likely to comply with treatment guidelines [19].

Among the medical practitioners, the utilization of guidelines was mostly for the management of hypertensive-diabetics (63.8%), followed by their use in the management of hypertensive-chronic kidney disease patients (34.8%), and then in essential hypertensive patients (39.1%). This to a large extent is indicative of the awareness of respondents of the multiplier effect of co-morbidities such as diabetes mellitus and chronic kidney disease on cardiovascular disease outcomes of patients with hypertension [20].

The respondents also combined the use of therapeutics with life-style modification in the management of the hypertensive patients (75.4%) which is quite commendable.

This study also revealed that although most of the respondents considered the guidelines appropriate for the management of hypertension in our environment (73.1%) they however feel the training they had received was not adequate (81.2%). This is a serious indictment on our health education/systems since these health professionals who should be forefront in the battle against this national epidemic feel that they ill-equipped to win the war. This is more worrisome, considering the fact that this study was carried out in a tertiary health facility where

the respondents were expected to be exposed to cutting-edge information in the practice of medicine.

## 5. CONCLUSION

The awareness of medical practitioners in this hospital of guidelines in the management of hypertension is quite high (87.0%) but this did not have the desired effect on utilization among the respondents (68.1%). These findings expose the gaps between knowledge and practice among this study population. The findings hence should serve as a starting point to design new teaching paradigms to increase physician awareness of hypertension treatment guidelines in Nigeria in particular, and in Africa and the developing world, in general which may meet the respondents' desire for a formal training in the use of these guidelines in order to better manage their hypertensive patients.

## CONSENT

It is not applicable.

## COMPETING INTERESTS

Authors have declared that no competing interests exist.

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